Just How Far Can California Possibly Go on Climate?

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Highlight: California wants to cut greenhouse gas emissions more than even President Barack Obama had proposed. But can the state pull it off, or will it falter?

Body

Correction Appended

Over the past decade, California has passed a sweeping set of climate laws to test a contentious theory: that it's possible to cut greenhouse gas emissions far beyond what any other state has done and still enjoy robust economic growth.

Now that theory faces its biggest test yet. Last August, the State Legislature set a goal of slashing emissions more than 40 percent below today's levels by 2030, a far deeper cut than President Barack Obama proposed for the entire United States and deeper than most other countries have contemplated.

So how will California pull this off?

On Tuesday, Gov. Jerry Brown signed a new law expanding the state's cap-and-trade program, which is expected to play a big role. But cutting greenhouse gases this deeply will involve more than cap and trade. The state plans to rethink every corner of its economy, from urban planning to dairy farms.

No one knows yet if it can succeed. "You can think of California as a giant laboratory" for climate action, said Severin Borenstein of the Haas School of Business at the University of California, Berkeley.

If California prevails, it could provide a model for other policy makers, even as President Trump scales back the federal government's efforts on climate change. The state may also develop new technologies that the rest of the world can use to cut emissions.

And if California falters, or if the experiment proves too costly? "Other states and countries will be watching that, too," Mr. Borenstein said.

Entering Uncharted Territory

Until now, most states have followed a standard playbook for curbing emissions. Market forces have replaced older coal plants with cheaper and cleaner natural gas, while state mandates have added modest shares of wind and solar power to the grid. As a result, domestic carbon dioxide emissions have fallen 14 percent since 2005 at relatively little cost.

But California has now plucked most of that low-hanging fruit. The state's emissions are nearly back to 1990 levels, it barely uses any coal and it has installed as many solar panels as the rest of the country combined. Per capita, California has the third-lowest emissions in the nation, after New York and the District of Columbia, which means further cuts will come less easily than they would for a state like Texas.

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“Each additional increment of carbon reduction is tougher than the previous one,” said Dan Reicher, director of the Center for Energy Policy and Finance at Stanford. He added, “California will have to reach deeper into the bag of technologies” to cut emissions from more stubborn polluters like oil refineries and cement plants.

In January, California’s Air Resources Board, which has broad latitude to carry out the state’s climate laws, detailed one possible strategy for cutting emissions 40 percent below 1990 levels by 2030.

First, by law, California must get 50 percent of its electricity from renewable sources by 2030, up from 25 percent today. That’s a herculean task in itself: The state is already straining to cope with sharp swings in solar power during afternoons and will soon have to juggle ever-larger shares of intermittent renewable electricity, by deploying batteries, reworking its grid or taking other novel approaches.

Second, the board envisioned the number of electric cars and other zero-emissions vehicles on California’s roads rising to 4.2 million by 2030 from 250,000 today. Freight trucks would have to become more efficient or electrified, while cities would need to adopt far-reaching strategies to promote mass transit, biking and walking.

But a major push on renewable power and transportation would get California just one-fourth of the way toward its goal. Other cuts would come from doubling efficiency savings from buildings and industry, no mean feat in a state that already has some of the strictest building codes in the country. The state would also need to lower the carbon content of its gasoline supply under the Low Carbon Fuel Standard, possibly by increasing biofuel use.

One-third of the reductions in the proposal would come from curbing climate pollutants other than carbon dioxide, including hydrofluorocarbons from air-conditioners and methane from landfills, wastewater facilities and manure piles at dairy farms. No state has ever regulated agriculture so aggressively, and dairy farmers are pushing back, warning that capturing methane from millions of cows could prove untenable.

In its proposal, the board emphasized that some of these strategies may not pan out — for instance, the Trump administration could block California’s move to force automakers to build more zero-emissions vehicles. Other regulations might reduce emissions less than anticipated, especially if California’s economy grows faster than expected.

So, as a complement to these efforts, Mr. Brown insisted on expanding another major program: cap and trade.

The Role of Cap and Trade

In 2012, under a previous climate law signed by Gov. Arnold Schwarzenegger, the Air Resources Board imposed a statewide ceiling on greenhouse gas emissions. It then distributed a fixed number of tradable pollution permits to power plants, refineries, factories and other large emitters.

Under this cap-and-trade program, businesses need to either cut their emissions or buy permits. The idea is that by setting a price on carbon, cap and trade spurs businesses to figure out for themselves the most economical way to reduce pollution. The total number of permits is intended to dwindle each year, pushing the state’s emissions downward.

Economists call the approach a cheaper path than inflexible regulations.

So far, California’s initial cap has had a relatively minor effect on emissions, as other policies, like the renewable electricity mandate, have done most of the heavy lifting and businesses have had relatively little trouble staying under pollution limits.

But as the cap keeps tightening, it’s expected to have a sharper bite. The law Mr. Brown signed extends the program through 2030, and limits the ability of businesses to purchase cheap offsets to comply (by, for example, paying for tree-planting programs).

If it works, the Air Resources Board expects cap and trade to deliver at least one-quarter of the emissions cuts needed by 2030. And, by auctioning off permits, the state will raise billions of dollars for more climate programs.

California has already earmarked $800 million from past auctions to help finance high-speed rail between Los Angeles and San Francisco, though under the new law lawmakers will have more say over spending and may redirect funds elsewhere.

In order to secure approval, the bill's backers made a number of compromises to critics worried that a strict cap might harm the state's competitiveness. Industries at risk of relocating will receive a mix of tax cuts and free permits to cushion the blow. (Some environmental groups opposed the bill for making too many concessions to polluters.)

Notably, the Air Resources Board must also now set a ceiling on permit prices — if they spike, regulators will flood the market with permits to prevent a political backlash. While no one is exactly sure how much California's climate policies will ultimately cost, this ceiling will set a limit on that price tag: If climate policy poses too severe a threat to economic growth, the state will prioritize growth.

What the World Might Learn

Mr. Brown has promoted California's policies as a way of convincing the world that the United States won't abandon the fight against climate change, even after Mr. Trump announced a withdrawal from the Paris climate agreement. "I want to do everything we can to keep America on track, keep the world on track," Mr. Brown said in May.

California is responsible for only 1 percent of global emissions. But it could contribute even more to the world's efforts by advancing new tools to tackle climate change, like floating deepwater wind farms.

If the state stumbles, that could provide valuable lessons, too. By 2030, California plans to close its last nuclear power plant, Diablo Canyon, which provides 9 percent of the state's electricity. The idea is to replace that lost power with renewables and efficiency. If that proves unworkable, it could offer a warning to other states facing nuclear shutdowns.

California's push to make cap and trade effective could also have global ramifications, especially since Europe has failed to gain traction with its emissions-trading program and China is testing its own version.

"If the cap-and-trade market melted down, that could be a real deterrent elsewhere," said Mr. Borenstein, the University of California professor. "The rest of the world is going to be watching closely."

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Correction: July 26, 2017, Wednesday

This article has been revised to reflect the following correction: An earlier version of this article referred incompletely to a category in the California Air Resources Board's proposal to cut greenhouse gas emissions. One-third of the reductions would come from a variety of climate pollutants other than carbon dioxide, not just from methane. The error was repeated in a chart.

PHOTO: Dairy cows in Fresno County, Calif. Many farmers are resisting the state's proposal to place tight limits on methane emissions. (PHOTOGRAPH BY SCOTT SMITH/ASSOCIATED PRESS)

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